



# Future Medical Shelter System (FMSS) Update

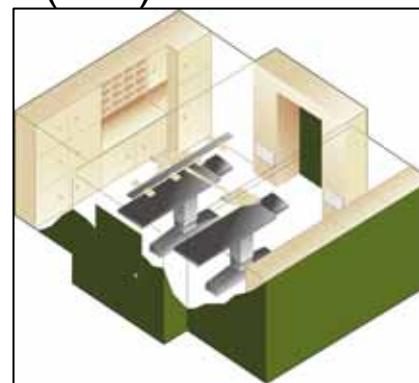
As of:

**21 April 2005**

Mr. Mark Arnold

Product Manager –Applied Medical Systems  
Army Medical Material Development Activity

(301) 619-7572



<b>Report Documentation Page</b>			<i>Form Approved OMB No. 0704-0188</i>		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>25 APR 2005</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-2005 to 00-00-2005</b>			
4. TITLE AND SUBTITLE <b>Future Medical Shelter System (FMSS) Update</b>		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Army Medical Research and Materiel Command, Army Medical Material Development Activity, Fort Detrick, MD, 21702</b>		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>4th Bi-Annual DOD JOCOTAS Meeting with Rigid &amp; Soft Wall Shelter Industry &amp; Outdoor Exhibition, 2-4 May 2005, Port Hueneme, CA</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>12</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			



# Future Medical Shelter System (FMSS) Update

## Description:

The Future Medical Shelter System (FMSS) is a multifaceted program designed to leverage Congressional funding to explore advanced rigid and soft-walled shelters for forward deployed healthcare providers. The scope is (1) to develop a self-contained emergency response package similar to the Forward Surgical Team concept, and (2) to develop a replacement for the Deployable Medical Systems (DEPMEDS) operating room shelter.

**Acquisition Strategy:** Full Developmental (Congressional Special Interest)

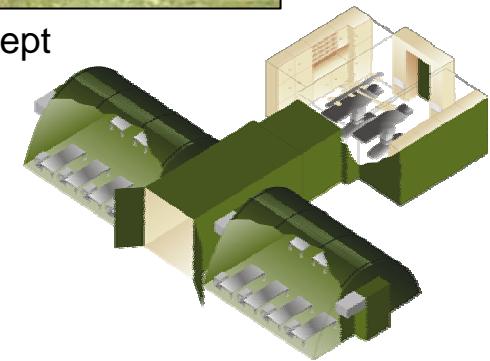
**Contractors:** Mobile Medical International Corporation, St. Johnsbury, VT; Oak Ridge National Laboratories, Oak Ridge TN; and EADS, Washington, DC.



Oak Ridge Concept



MMIC Concept



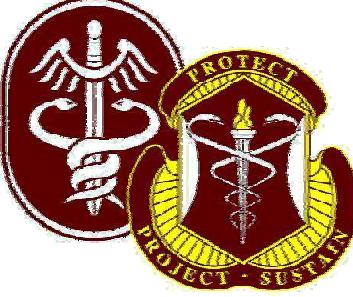
EADS Concept



## **FMSS Deliverables**

The AMEDD has been fortunate to work on three separate initiatives, with three separate Congressionally sponsored vendors to develop multiple concepts of the FMSS.

- 1.) Contractor: Oak Ridge National Laboratories (ORNL)  
Deliverable: 3:1 Expandable DEPMEDS OR ISO (Seabox)  
60' of airbeam tentage (Vertigo, Inc.)  
Did not receive FY05 CSI Funding
  
- 2.) Contractor: Mobile Medical International Corporation (MMIC)  
Deliverable: 3:1 Expandable DEPMEDS OR ISO (AAR Cadillac)  
60' of airbeam tentage (Federal Fabrics, Inc.)  
Received \$5.2M in FY05 CSI RDT&E funds
  
- 3.) Contractor: EADS-Dornier  
Deliverable:
  - 1) Technical Drawings of 3:1 Expandable DEPMEDS OR ISO (modified Trans-Hospital) (December 2004)
  - 2) Prototype OR ISO (January 2006) Received \$1.7M in FY04 CSI Funding that could not otherwise be executed



## ORNL ISO Container, 3:1 Expandable

Application: DEPMEDS OR ISO replacement

Packed Dimensions: 20'x8'x8' (ISO Standard)

Expanded Dimensions: 20'x20'x8' (~ 400 sq. ft.)

Weight: 15,000 lbs loaded; 10,700 lbs empty

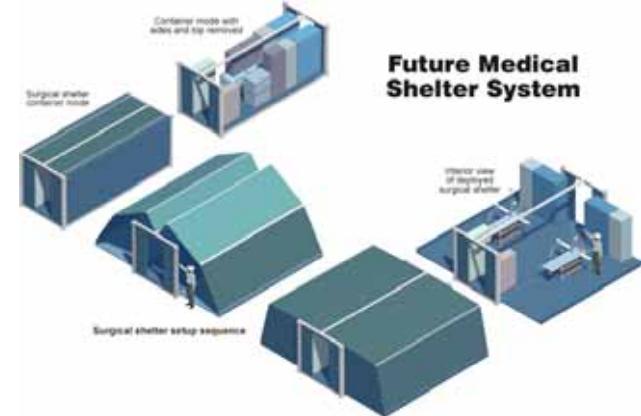
Expansion Time: 90 seconds w/ 2 personnel

Time to Operational Configuration: <10 minutes

Description:

- Can erect from 24V vehicle battery
- CB overpressure capable.
- Configured with two OR tables, all required medical equipment and supplies, integrated lighting, electrical, and medical gas plumbing.
- Requires external environmental control and power generation.

Status: Prototype delivered to Ft. Detrick, MD, June 04





## ORNL Airbeam Tentage

Contractor: Vertigo, Inc.

Application: CSH Patient Care Ward

Dimensions: 32'x20'x10' (approx. 640 sq. ft.)

Weight: 600 lbs

Expansion/Strike Time: <10 minutes w/ 2 people

Description:

- High pressure braided airbeam technology
- Chemical protection possible through external fabric replacement or internal CB liner
- Integral personnel and litter patient airlocks
- Includes lights, power distribution, thermal liner, and air distribution plenum
- Multiple modularity options and TEMPER connectivity

Status: - Prototype delivered October 2003  
- Logistics Transformation Agency evaluation,  
APG, Nov 04





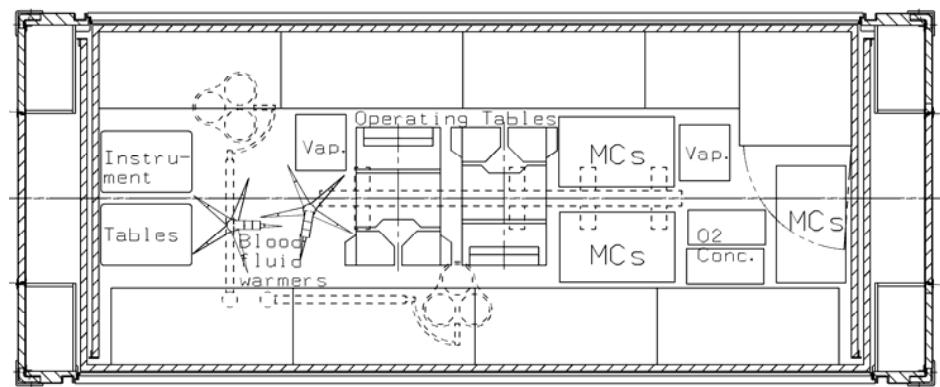
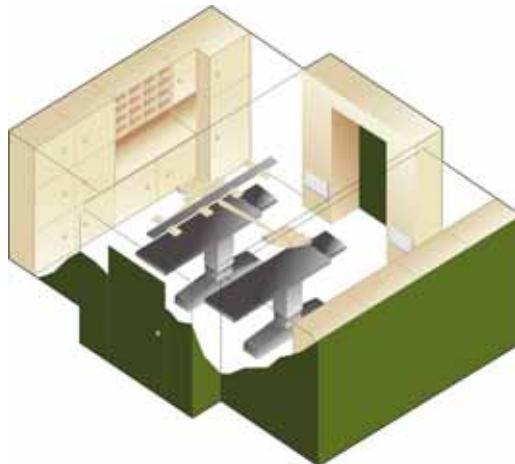
## EADS FMSS Update

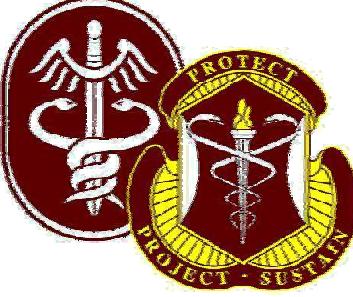
**Contract signed:** 23 February 2004

**Scope of Work:**

- 1) Provide developmental design drawings and associated lists for an OR module in a 2 side expandable hard shelter adapted to the needs of a CSH
  
- 2) Fabricate OR container and support container (Due: 4Q05)

**Status:** Final Design Review, 14 Dec 04, Ft. Detrick, MD.  
Prototype Fabrication Ongoing





## EADS Main Features

- High degree of pre-integration using built-in case work to reduce set-up/ strike time
- Ergonomic placement and work flow for two OR teams
- Medical gas distribution system
- Goal: Provide sufficient storage to transport all required equipment and a one day supply of consumables in the shelter (exception would be drapes, surg. Inst., fluids)



Current TRANSHospital



## MMIC FMSS Update

### Scope of Work:

The 21<sup>st</sup> CMHS is designed as two individual building blocks that can be used independently or complexed. The basic building blocks are a single hard sided two bed operating suite shelter and a secondary hard sided shelter with two integral ten bed soft sided wards for pre and post operative care.

**Status:** Universal Support Container (USC) completed June 2004

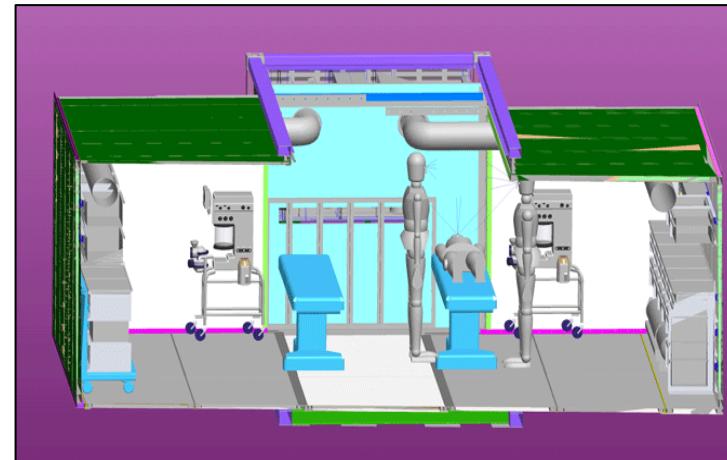
- OR and USC delivered with airbeam tentage
- FY05 effort will include prototypes without integrated generators and ECU as well as other hard wall shelters used in field hospitals





## MMIC OR ISO Description

- Rapid set-up/strike (approximately 15 minutes)
- Integral – Generator & ECU w/ NBC Filtration
- Integral Medical Gas system w/alarm.
- Electric leveling system (w/ manual override)
- Universal Vestibule/Airlock
- LED Lighting (Background & OR Light)
- Prototype delivered February 05





## MMIC Supply Container/Patient Wards

- Fully Integrated Soft Sided Patient Wards (2X – 600 Sq. Ft w/ 10 patient beds)
- Self sustaining for up to 72 Hrs.
  - Integral - ECU w/ NBC Filtration & Power w/Emergency System
  - Integral Medical Gas system w/alarm.
- Soft shelter (Federal Fabrics)
  - Self Erectable without exposure to outside environment within 5-7 minutes
  - New, modular frame design
  - 10' sections w/ full end complexability.
  - Frame is structurally redundant.
- Deployed at Fort Detrick, MD, July 2004

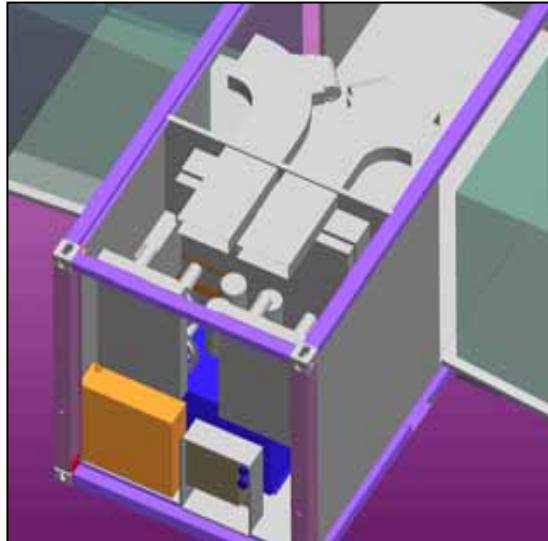




## Universal Support System™ & Mobile Surgery Unit II™

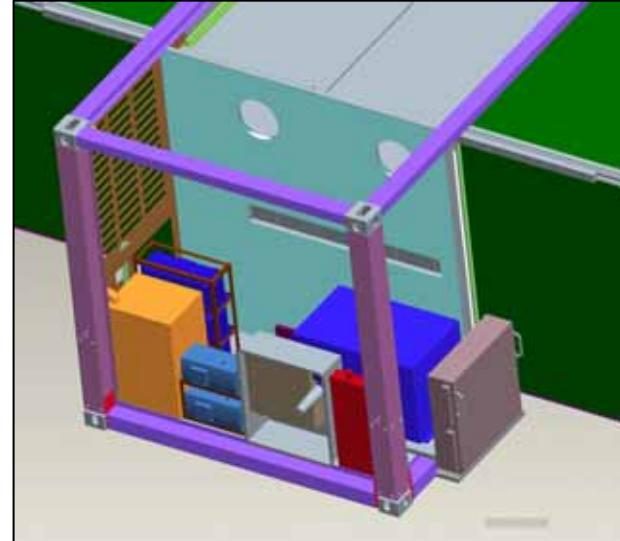
### ECU Systems:

- Staged for optimum efficiency & reliability
- Filtration HEPA in OR & 95% in Patient Wards
- Exceed minimum air change requirements
- Sealed air handling system w/NBC Filtration
- Utilization of reject generator heat
  - (10 KW in OR & 20 KW in Patient Wards)



### Power Systems:

- Integrated Diesel Generators
- Shore Connection for both AC and DC Power
- Integrated Emergency Power System





# Current status

- MMIC and ORNL prototypes are currently being tested at Camp Bullis, Ft. Sam Houston San Antonio.
- The primary goal will be to prove the concept and gather information as for the second spiral of the development cycle
- MMIC and EADS are funded for FY05
- MMIC will be building advanced prototypes of their OR and USC as well as the other modules used in hospitals.
- EADS prototypes will be delivered in the 4Q05